IN THE CLAIMS:

1. - 11 (Canceled).

12. (Currently Amended) A receiver operating in an environment where a transmission channel, **H**, between a transmitter of information and said receiver has a memory corresponding to n transmitted symbols, said receiver being responsive to an n_o plurality of receiving antennas comprising:

a pre-filter having an $n_o \times n_i$ plurality of FIR filters, F(i,k), where n_i is a number of transmitting antennas whose signals said receiver is processing, i is an index running from 1 to n_o and k is an index running from 1 to n_i, each filter F(i,k) being responsive to a signal that is derived from receiving antenna i, and applying its output signal to a pre-filter output point k;

decision logic responsive to said pre-filter output points; and

a sampling circuit interposed between said n_o plurality of antennas and said pre-filter that samples received signal at rate $T_s = \frac{T}{l}$, where l is an integer that is greater than 1, and T is symbol rate of a transmitter whose signals said receiver receives.

~~The receiver of claim 2~~ where said plurality of FIR filters is expressed by matrix **W**, and **W** is computed by $\mathbf{W}^*_{opt} = \tilde{\mathbf{B}}^*_{opt}\mathbf{R}_{xy}\mathbf{R}^{-1}_{yy}$, $\mathbf{W}^*_{opt} = \tilde{\mathbf{B}}^*_{opt}\mathbf{R}_{xx}\mathbf{H}^*(\mathbf{H}\mathbf{R}_{xx}\mathbf{H}^* + \mathbf{R}_{nn})^{-1}$, or $\mathbf{W}^*_{opt} = \tilde{\mathbf{B}}^*_{opt}(\mathbf{R}^{-1}_{xx} + \mathbf{H}^*\mathbf{R}^{-1}_{nn}H)^{-1}\mathbf{H}^*\mathbf{R}^{-1}_{nn}$, where $\mathbf{R}_{xx}$ is an autocorrelation matrix of a block of signals transmitted by a plurality of transmitting antennas to said n_o antennas via a channel having a transfer characteristic **H**, $\mathbf{R}_{nn}$ is an autocorrelation matrix of noise received by said plurality of n_o antennas during said block of signals transmitted by said

transmitting antennas, $\mathbf{R}_{xy} = \mathbf{R}_{xx}\mathbf{H}^*$, $\mathbf{R}_{yy} = \mathbf{H}\mathbf{R}_{xx}\mathbf{H}^* + \mathbf{R}_{nn}$, and $\tilde{\mathbf{B}}^*_{opt}$ is a sub-matrix of matrix $\mathbf{B}^*_{opt}$, where $\mathbf{B}_{opt} = \arg\min_B trace(\mathbf{R}_{ee})$ subject to a selected constraint, $\mathbf{R}_{ee}$ being the error autocorrelation function.

13. **(Original)** The receiver of claim **12** wherein said plurality of FIR filters are subjected to designer constraints relative to any one or a number of members of the following set: transmission channel memory, size of said block, effective memory of the combination consisting of said transmission channel and said pre-filter; n_i, n_o, autocorrelation matrix $\mathbf{R}_{xx}$, autocorrelation matrix $\mathbf{R}_{nn}$, value of factor l in said sampling circuit, and decision delay.

14. **(Previously Presented)** The receiver of claim **12**, where said matrix **W** is expressible by $\mathbf{W} \equiv \begin{bmatrix} \mathbf{W}_0 & \mathbf{W}_1 & \cdots & \mathbf{W}_{N_f-1} \end{bmatrix}^t$, where matrix $\mathbf{W}_q$, q being an index between 0 and $\mathbf{N}_{f-1}$, is a matrix that specifies q[th] tap coefficients of said FIR filters.

15. **(Original)** The receiver of claim **12** where said constraint restricts **B** so that $\mathbf{B}^*\mathbf{\Phi} = \mathbf{I}_{n_i}$, where $\mathbf{\Phi}^* \equiv \begin{bmatrix} \mathbf{0}_{n_i \times n_i m} & \mathbf{I}_{n_i} & \mathbf{0}_{n_i \times n_i (N_b - m)} \end{bmatrix}$ and m is a selected constant.

16. **(Original)** The receiver of claim **15** where $\mathbf{B} = \bar{\mathbf{R}}^{-1}\mathbf{\Phi}(\mathbf{\Phi}^*\bar{\mathbf{R}}^{-1}\mathbf{\Phi})^{-1}$, $\bar{\mathbf{R}}$ is a sub-matrix of a matrix $\mathbf{R}^\perp = \mathbf{R}_{xx} - \mathbf{R}_{xy}\mathbf{R}_{yy}^{-1}\mathbf{R}_{yx}$.

17. (Original) The receiver of claim **12** where said constraint restrict **B** so that $\mathbf{B}^*\mathbf{B} = \mathbf{I}_{n_i}$.

18. (Original) The receiver of claim **17** where $\mathbf{B} = \mathbf{U}\left[e_{n_i N_b} \quad \cdots \quad e_{n_i(N_b+1)-1} \right]$, each element e_p is a vector having a 0 element in all rows other than row p, at which row the element is 1, and U is a matrix that satisfies the equation $\bar{\mathbf{R}} \equiv \mathbf{U\Sigma U}^*$, $\mathbf{\Sigma}$ being a diagonal matrix.